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The Maneuver-Sustainment Dynamic Model

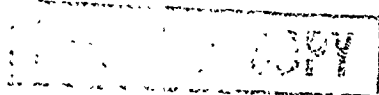
**A Monograph
by
Major Michael J. Harwood
Infantry**



**School of Advanced Military Studies
United States Army Command and General Staff College
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ABSTRACT

The Maneuver-Sustainment Dynamic Model. By Major Michael J. Harwood, USA, 48 pages.

The tension between the operational functions, maneuver and sustainment, produces an interesting dynamic. As much as some may insist, maneuver at the operational level of war cannot be completely addressed without a thorough discussion of sustainment. Furthermore, reality mandates that operational maneuver and sustainment are inseparable. This study attempts to explain the relationship between maneuver and sustainment with a model, the maneuver-sustainment dynamic model. The model consists of four elements: risk, concentration, genius of the commander, and initiative.

These four elements are first explained in terms of supporting theory and doctrine. Next, the model and its elements are applied to three historical campaigns: Slim in Burma, Rommel in North Africa, and Eisenhower in France. Through this discussion and analysis, the model is validated using established criteria.

The study concludes that the model is useful as a guide for operational thinking, as a means for the analysis of historical campaigns, and, potentially, as a tool for operational design.

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I. INTRODUCTION

Operational art, the link between military strategy and tactical warfare, translates strategic aims into military objectives to be attained through the successful conduct of campaigns and operations. A critical aspect of operational warfare is the application and sustainment of combat power at the decisive time and place. US Army Field Manual (Coordinating Draft) 100-6, Large Unit Operations, identifies certain functions which allow the operational commander to influence the result of operations: intelligence, maneuver, fires, sustainment, and deception. Although a tension can be said to exist among all of these operational functions, perhaps the most dynamic relationship exists between maneuver and sustainment. It is the ways and means of conducting warfare in pursuit of a strategic end state which constitutes the essence of operational art.

To better understand the relationship between maneuver and sustainment at the operational level of war, a model is presented, hereafter referred to as the maneuver-sustainment dynamic model. Given that both maneuver and sustainment are integral to successful campaigning, the challenge of the operational commander is to establish and maintain this relationship with respect to the desired end state. The maneuver-sustainment relationship can be characterized across a broad spectrum, ranging from a conservative approach to warfare to one of high risk.

The primary purpose of the maneuver-sustainment dynamic

model is to serve as a vehicle for the analysis of military campaigns. Application of the model will reveal the essence of campaigning - how the operational commander balances the ways and means available to achieve an end state. As a guide to thinking at the operational level of war, the model also serves the campaign planner in the design and conduct of campaigns and major operations.

The campaigns of Field Marshal Viscount William J. Slim, Field Marshal Erwin Rommel, and General Dwight D. Eisenhower during the Second World War provided the inspiration for this examination of the maneuver-sustainment dynamic. Not only do these particular campaigns present the opportunity to learn from three of the best commanders in the history of modern warfare, but they offer the student of military history and the practitioner of the operational art three distinct theaters of operation from which to study the maneuver - sustainment dynamic. These campaigns suggest the importance of a commander's concept on the outcome of the campaign. Ostensibly, the campaigns which stress the achievement of positional advantage and destruction of the enemy force have more inherent potential for decisive results than do those which stress sustainment of the effort.

The relevancy of the maneuver-sustainment dynamic to the US Army is obvious in light of impending force reductions and resource cuts. The Army's warfighting doctrine, now eight years old, is at a crossroads. In my opinion, what may emerge after the fiscal dust settles is a more conservative doctrine, a doctrine which eschews bold maneuver in favor of a methodical

build-up of resources. It is the contention of this paper that the operational commander must come to grips with the maneuver-sustainment dynamic model in the conduct of future campaigns. The model and the historical campaigns examined will demonstrate a perspective on campaigning which suggest that doing more with less epitomizes maneuver warfare, thereby establishing a mandate for the continuation of AirLand Battle doctrine as the Army's operational concept.

II. The Maneuver-Sustainment Dynamic Model

The maneuver-sustainment dynamic model is presented as a means of understanding the tension which exists between maneuver and sustainment in terms of the model's elements: risk; concentration; genius of the commander; and initiative. Understanding this relationship is an essential part of campaign design.

These particular elements were identified subsequent to my study of classical military theory and historical campaigns. The tension which exists between maneuver and sustainment at the operational level of war is tangible and dynamic. I was looking for characteristics of warfare which helped to describe this relationship. The four I selected represent a distillation of the maneuver-sustainment dynamic and a microcosm of war itself. The model's elements were not chosen for their individual merit, but rather for their relational characteristics with the other elements. As common denominators of the dynamic, they mutually mesh and grind against each other to produce a greater result.

Risk adds the stark reality of war to the model, mediating between the theoretical and actual conduct of war. Concentration in time and space pits strength against weakness, both in terms of combat power and materiel. Initiative connotes a positive purpose taken in a specified direction to achieve a particular aim. Genius is the skill of the commander. These four elements are rooted in classical theory and are deemed essential to the conduct of military campaigns.

As both a diagnostic measure of a campaign and a guide for future operations, the model attempts to get to the heart of campaigning. The model is merely a tool to precipitate operational thinking about two of the most important operational functions, maneuver and sustainment. No element of the model may stand alone, although the commander is free to focus emphasis where required. It is the commander's employment of these elements in combination which give each campaign its uniqueness. Each element of the proposed model will be discussed in turn.

Risk, in terms of the maneuver-sustainment dynamic model, is simply the difference between the ways and means available to accomplish the desired end state. More specifically, risk at the operational level of war requires the operational commander "to balance immediate and long-term operational requirements (for failure to do so) will result in an eventual imbalance in combat and sustaining resources that may force the campaign to culminate at the worst possible time." ¹ It is the commander's acceptance of this imbalance which defines risk in the context of the maneuver-sustainment dynamic model. The proper analysis

of risk can reap grand results whereas a miscalculation can spell utter disaster. The point is that risk, in terms of balancing the ends, ways, and means of campaigning is always present and therefore plays a central role in the proposed model.

Concentration is a key element in understanding the maneuver-sustainment dynamic. The main purpose of maneuver is to concentrate overwhelming combat power at the decisive point within a theater of operations.

At its simplest, operational maneuver consists of moving forces from their base or bases of operations by the most direct route to their point of concentration. (2)

Concentrating force at the decisive point must be based upon the commander's assessment of enemy strengths and weaknesses. As he cannot be strong everywhere, the commander must conduct economy of force operations. Generally speaking, concentration of overwhelming combat power cannot occur without economy of force somewhere else. It is the coming together of distributed forces in time and space which is the essence of campaigning.

Concentration begets more than economy of force. Clausewitz posited that "a major battle in a theater of operations is a collision between two centers of gravity."³ The operational commander builds his center of gravity not only through concentration and economy of force, but through the careful allocation of resources. The concepts of concentration and economy of force pertain to sustainment and combat power alike. Center of gravity, according to FM 100-5, is an army's⁴ "source of strength or balance." The maneuver-sustainment

dynamic model suggests that "balance" occurs when the operational commander is able to concentrate combat power and resources in one area and to conduct economy of force operations in another with less combat power and resources.

Notwithstanding the tremendous staff work required to conduct such a concentration, the personal qualifications and abilities of the operational commander become paramount.

Military genius is the engine which drives the maneuver-sustainment dynamic. Quite a forbidding term today, "genius" had a more practical use in the days when Clausewitz defined it as "a harmonious combination of elements, in which one or the other ability may predominate, but none may be in conflict with the rest."⁵ Two of Clausewitz's elements of military genius are of particular interest here.

The first is "the inner light which leads to truth (coup d'oeil)...and the second, the courage to follow this faint light⁶ wherever it may lead (determination)." The operational commander needs both of these qualities to effectively operate within the maneuver-sustainment dynamic. In any dynamic situation, change and uncertainty are in a constant struggle to overcome order. "Eventually, campaigning - conducting the operational movements between tactical actions - is a matter of approximation and constant adjustment."⁷ Coup d'oeil allows the operational commander the ability to quickly cut through the fog and to make the rapid decisions required during a campaign. Determination complements coup d'oeil in that it gives the commander the wherewithal to fend off doubt and hesitation in the pursuit of what he knows to be the correct course. Military

genius then is an indispensable part of the maneuver-sustainment dynamic model and is in fact what holds the model together.

Initiative, the final element of the maneuver-sustainment dynamic model, provides much of the impetus for stress and strain within the dynamic. FM 100-5 describes initiative as the means for

...setting or changing the terms of battle by action. Applied to the force as a whole, initiative requires a constant effort to force the enemy to conform to our operational purpose and tempo while retaining our own freedom of action. (8)

The achievement of positional advantage on the battlefield, which maneuver provides, sets the terms of battle as it dictates to the enemy where, when, and how the fight will occur.

Sustainment is often at odds with the action taken to set the terms of battle, as "the capability to sustain the campaign ⁹ may set the tempo of operations." This is indicative of the push-pull relationship which exists within the maneuver-sustainment dynamic and highlights the fragility of initiative in the conduct of campaigns. Initiative, in most instances, must be tempered with logistics, for at the operational level of war it is the commander's ability to sustain the force which governs what can and, perhaps even more ¹⁰ importantly, what cannot be accomplished.

These then are the elements which configure the maneuver-sustainment dynamic model: risk, concentration, genius, and initiative. The model relies upon the interaction between elements, the by-products of which fuel the dynamic. Concentration and initiative are often at odds as the commander attempts to balance the ways and means available to achieve an

end state. The level of risk the commander is willing to accept, or compelled to accept, tips this balance one way or the other. Military genius lights the path for the commander. Validation of the proposed model requires application of criteria. The next section will develop the criteria to be employed.

III. Criteria

Any model must overcome the rigors of testing to earn credibility. The following criteria will be used to test the maneuver-sustainment dynamic model.

1. Military theory and current US doctrine suggest that the elements of the proposed model must be present in the maneuver-sustainment dynamic. Are classical and contemporary military theorists supportive of the model's elements? Is AirLand Battle doctrine congruent with the elements of the proposed model?

2. The true test of any model is its application to real world events. The degree to which the model's elements were present during military campaigns will be indicative of the model's validity. To gain this historical perspective, the campaigns of Slim, Rommel, and Eisenhower will be briefly summarized, then examined with respect to the proposed model.

Should the maneuver-sustainment dynamic model be compatible with the aforementioned criteria, then it may demonstrate potential for utility in the study and preparation of military campaigns. Failure to meet either one of the criteria will

invalidate the model. The next three sections will examine the model in light of the historical campaigns cited.

IV. Slim in Central Burma, 1945

In early 1945, Lieutenant General William J. Slim and his Fourteenth Army were poised to strike a decisive blow against Lieutenant General Hyotaro Kimura, the commander of Japanese forces in Burma. Previously, Slim had crushed the Japanese Army's own offensive at Imphal and Kohima in a classic confrontation where a superior Japanese force stretched its lines of communications to the breaking point and culminated. Just as Kimura's strength was dissipating, Slim had cleverly built a strong logistical base from which to conduct offensive operations and to exploit the Japanese failure.

His initial plan was to fight a decisive battle in the open plain north of the Irrawaddy River where he could use his superior air power and armored forces to defeat the Japanese. The enemy, however, would not oblige him. Realizing that his initial plan would not work, Slim prepared a new plan which¹¹ eventually developed into the Battle of Meiktila-Mandalay. He sent his XXXIII Corps across the Irrawaddy north of Mandalay to fix Japanese forces and to convince the enemy that this was his main attack. Concurrent with this operation, Slim's IV Corps moved surreptitiously south to an unexpected crossing site on the Irrawaddy and drove eastward into the enemy's rear toward Meiktila, a key enemy communications center in central¹² Burma.

Slim achieved total surprise. His IV Corps crossed the Irrawaddy at Pagan against light resistance on 14 February 1945; the armor moved swiftly across open terrain towards Meiktila and captured it four days later. The Japanese fought ferociously to recapture Meiktila, but all counterattacks failed. Slim's momentum, after unhinging the Japanese defense at Meiktila, swept him southward to Rangoon and to eventual Japanese capitulation in Burma.

Application of the Maneuver-Sustainment Dynamic Model

Risk

Slim, in balancing his immediate and long-term operational force and sustainment requirements, epitomized risk in the context of the maneuver-sustainment dynamic model. His immediate operational requirement in late 1944 was the logistical rejuvenation of the Fourteenth Army. This requirement was of such priority that Slim conceded the initiative to the Japanese until his army was ready for further offensive action, his long-term operational requirement. He chose to wait for the enemy to attack him with the knowledge that Kimura was nearing the end of his own logistics and was in fact at or near the culminating point of his offensive. Slim's short-term emphasis on sustainment in late 1944 allowed him to seize the initiative and to unhinge Kimura in early 1945 with his attacks at Mandalay and Meiktila. He mitigated risk through the use of aerial resupply, engineer operations, and improvisation.

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Whereas Slim's operational risk was successful, the

Japanese commander accepted an imbalance in combat and sustaining resources beyond the point of culmination and paid the ultimate price for the miscalculation. Strapped logistically, the Japanese commander attempted to destroy Slim's army, but was ill prepared to do so. The risk did not pay off and he was overcome by the maneuver-sustainment dynamic. His army reached its culminating point against Slim's strong defense, he lost the initiative to Slim, and he was defeated.

Concentration

The element of concentration was demonstrated to a high degree during Slim's Burma campaign. Following the culmination of the Japanese offensive, Slim set out to destroy the enemy's center of gravity in Burma, Kimura's army. He focused on Meiktila, the key communications node for the logistically crippled enemy army, and concentrated force against it. Slim's bold strike against the enemy's logistical weakness unhinged the Japanese center of gravity in central Burma and led directly to an Allied victory in the theater of operations.

The key to his victory lies in Slim's ability to concentrate resources prior to his counteroffensive through the unprecedented use of aerial resupply, forward airfield construction, road and bridge building, and logistical improvisation. In essence, he was able to delay his own culminating point well beyond that of his enemy. Slim's logistical concentration surprised Kimura¹⁴ and was a major factor in Kimura's defeat. The Japanese, on the other hand, attempted to concentrate force against Slim's Fourteenth Army during their offensive in late 1944 but lacked the ability to

sustain the force. Concentration therefore plays a very important role in the maneuver-sustainment dynamic.

Genius

The Burma campaign is a testimony to Slim's genius as a commander. His demonstration of coup d'oeil and determination dominate this campaign. Rarely in the history of warfare can one find an example of a commander intentionally surrendering the initiative to the enemy. Slim, who was focused on long-term operational requirements, chose to allow the enemy in the short-term to flail himself wastefully against his defenses beyond the point of culmination. He correctly recognized the enemy's weakness to be the ability to conduct sustained offensive operations over lengthening lines of communications. He deduced that his own army's strength was the ability to concentrate resources through aerial resupply in preparation for a grand counteroffensive. When he did launch his counteroffensive, Slim saw the town of Meiktila, deep in the enemy's rear, as the decisive point. He decided that the best way to attack this decisive point was to divide his force before the Irrawaddy River, sending one corps across and the other more than 300 miles southward along the river to assault across at another crossing point. Having none of the specialized river assault equipment available to European commanders, Slim had to fabricate huge rafts to ferry tanks, troops, and trucks to the far side.

The point is that Slim remained focused on his operational objective throughout the campaign and overcame all impediments to his desired end-state. As a major field commander far from

his base of support, Slim had little influence on what was given to him. "His genius lay in making extraordinary good use of the human as well as material resources that were provided." ¹⁵

Furthermore, this campaign exemplifies

the principle he was to follow on so many occasions, that once he was satisfied in his own mind that the main idea was the correct one, everything must be subordinated to it...or the battle would be lost. (16)

Although the logistical problems were seemingly insurmountable and the risks great, he was determined to stay the course. Unlike Kimura, Slim's actions were calculated, backed up by the concentration of combat power and resource, and derived from the coup d'oeil and determination of military genius.

Initiative

That Slim's actions set or changed the terms of battle is an understatement. The Burma campaign clearly demonstrates the tension within the maneuver-sustainment dynamic and identifies initiative as a major source of that tension. Certainly, Slim's bold strike against Meiktila shows how achieving positional advantage can set the terms of battle, but Slim's achievement of logistical surprise was the precursor to Fourteenth Army's successful maneuver.

Slim shrewdly realized that Kimura's maintenance of the initiative, at a point in time and space when the Japanese could ill afford it, would spell disaster for the enemy army. By surrendering the initiative, he in essence established the conditions for the maneuver-sustainment dynamic within the Japanese Army to work against Kimura and allowed his own dynamic to become stronger. Slim's actions do not negate initiative in

the model, but serve to highlight the interaction amongst the elements within the dynamic.

The terms of battle were actually set when the Japanese offensive culminated against the British defense, while Slim concentrated his resources in preparation for the counteroffensive. The Japanese were prohibited from concentrating the requisite resources to sustain their offensive operations due to their tenuous lines of communication. As a result, Fourteenth Army set the tempo of operations for the remainder of the campaign, a good example of how sustainment and initiative are linked within the maneuver-sustainment dynamic model.

Slim's Burma campaign demonstrates the validity of the maneuver-sustainment dynamic model as each of the model's elements was present during the campaign to a great degree. Since the Crimea, the British Army "tended to stress supply at the expense of mobility."¹⁷ Slim turned this around in Burma. Although sustainment played a profound role in the campaign, in the balance, Slim executed a maneuver driven campaign. He refused to let logistical problems prevent him from achieving his operational aim. He defeated the Japanese Army in Burma through his decisive use of the maneuver-sustainment dynamic.

This campaign also suggests that the elements of the maneuver-sustainment dynamic model combine to achieve the desired effect. Observed in a vacuum, a single element of the model is indecisive. The synergism produced by combining the elements, however, defines the campaign. The campaign further

suggests that the elements of the model are weighted in importance, relative to the campaign. When applied to Slim's Burma campaign, the elements were weighted in the following priority: genius of the commander, initiative, risk, and concentration. Slim's intentional relinquishment of the initiative to a logistically beleaguered enemy was just as important in this campaign as was his use of initiative to achieve positional advantage over a defending enemy. Both instances required Slim's understanding of the maneuver-sustainment dynamic in terms of his own dynamic and that of his enemy; both instances set the terms of battle.

V. Rommel in North Africa

Rommel's theater of operations in North Africa offers a stimulating contrast to Slim's in Burma; the insights gained through a comparison of the theaters themselves and the campaigns conducted within these theaters provide an excellent test for the maneuver-sustainment dynamic model. It must be noted here that neither Slim's nor Rommel's theater was the main theater of operations, a point which will be touched on later in the discussion.

Rommel, a great proponent of mechanized warfare, observed that:

Of all the theaters of operation, North Africa was probably the one where the war took on its most modern shape. Here were opposed fully motorised formations whose employment the flat desert, free of obstructions, offered hitherto unforeseen possibilities. (18)

He quickly turned the possibilities into reality.

After landing in Tunisia in March 1941, Rommel's relatively smaller force advanced 350 miles in just twelve days and reclaimed everything, except the key port of Tobruk, that the Italians had lost to the British after two months of fighting. By the end of 1941, however, Rommel was pushed back to within fifty miles of his start point. Remarkably in 1942, outnumbered once again, he resumed the offensive; he moved 550 miles this time, captured Tobruk, crossed into Egypt, and advanced to El Alamein, a mere 150 miles from Cairo. Eleven months after reaching El Alamein, what was left of an exhausted Panzer Army Africa was captured by Allied forces on the coast of
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Tunisia.

Application of the Maneuver-Sustainment Model

Risk

Rommel made the distinction between boldness and a military gamble. His rationale for this distinction is applicable to the operational level of war and provides insight into the maneuver-sustainment dynamic. He defined a bold operation to be one in which there is no guarantee of success, but in the event of failure, a bold operation will leave the commander with sufficient force to deal with any situation. A military gamble, on the other hand, is an operation with only two possible outcomes: victory or complete destruction of the friendly force. A gamble may be justified when defeat is only a matter of time; gaining time serves no useful purpose due to the inevitability of defeat. Under these circumstances, the commander must conduct an operation of great risk if he is to

have any chance of victory. Rommel's experience in warfare taught him that bold decisions possessed the most potential for success even when the odds were overwhelmingly in his favor.²⁰ He thought it "better to operate on the grand scale rather than to creep about the battlefield anxiously taking all possible security measures against every conceivable enemy move."²¹

His thinking on modern warfare was imbued with the spirit of armored combat and its inherent risk. Slim in Burma used aerial resupply, engineer operations, and logistical improvisation to mitigate his risk taking within the maneuver-sustainment dynamic. Rommel, in the desert of North Africa, approached this dynamic from the maneuver side of the house.

Speed, maneuver, and concentration were Rommel's keys to mitigating risk and offsetting his numerical inferiority. Inherent within these tenets of armored warfare adhered to by Rommel and the proponents of the "armoured idea" was risk, the difference between the ways and means available to achieve an end state. His decision to renew the offensive in 1942 was certainly a bold one, fraught with risk. He saw the need to strike the enemy hard and fast, before the British could get their logistical house in order, move against him with superior forces, and seize the initiative.

He did so and achieved success at Gazala. On 21 June 1942, Tobruk was captured by German forces and Rommel found himself squarely on the horns of the maneuver-sustainment dynamic dilemma. Rommel's Panzer Army Africa was rapidly approaching

its culminating point, but he saw an opportunity to pursue the shattered British force and to achieve total victory in North Africa. Shortly after his arrival in Tunisia in April 1941, Rommel stated:

I had made up my mind to stand out from the start for the greatest possible measure of operational and tactical freedom and what is more, had no intention of allowing good opportunities to slip by unused. (22)

The fruits of Clausewitzian pursuit were too tempting a plum for Rommel:

...it would have been militarily foolish to impose a halt on the victorious panzer army, even in its weakened state, when the enemy were on the run, and when it had Egypt within its grasp; in an advance, time is of the essence and no retreating army should be given a respite in which to repair its strength, build up its defense or to mount a counter-attack. (24)

Unfortunately for Rommel, the tenets of armored warfare he so strictly espoused could not overcome the imbalance in ways and means which existed in his army as it sped across the Egyptian frontier towards ultimate defeat. In retrospect, considering the magnitude of this imbalance, Rommel's risk appears imprudent.

Concentration

Victory in armored warfare, according to Rommel, resulted from

the art of concentrating strength at one point, forcing a breakthrough, rolling up and securing flanks on either side, and then penetrating like lightning, before the enemy has time to react, deep into his rear. (25)

Once the enemy force was divided and paralysis of command and control was achieved, he could then turn on the shattered remnants and destroy them in detail. Rommel's tactics and

headlong thrusts into the operational depth of the British Eighth Army may have been congruent with the "armoured idea", but not so with the maneuver-sustainment dynamic.

Rommel's center of gravity was his ability to sustain operations in the harsh desert environment. The problem was that Rommel was conducting operational level maneuver with tactical level sustainment. It was his inability to concentrate resources at the operational level of war which eventually brought him to his knees. Instead of the war of maneuver which he tried so desperately to prosecute, Rommel's desert campaign and that of the British was rapidly relegated to one of material. The side that could achieve and maintain materiel superiority would win.

The fact that the North African theater was secondary in the German war effort, and the only theater for the Allied forces, determined to some extent which side could concentrate resources the best. Rommel had a distinct disadvantage in this respect as OKW, more concerned about activities on the Eastern Front, constrained the flow of resources into his theater. Allied interdiction of Rommel's life line from Axis Italy was further detrimental to his efforts. He was relegated to a reliance upon captured British stores and equipment for the sustainment of his operations, whereas the British established a relatively unimpeded base of sustainment on the continent.

Genius

To Rommel, maneuver warfare in the desert environment required a more developed sense of coup d'oeil and

determination. In terms of the maneuver-sustainment dynamic, the desert environment appears to have offered commanders less room for error in functioning within the dynamic and hence required sharper skills.

Here everything is in flux; there are no obstruction, no lines, water or woods for cover; everything is open and incalculable; the commander must adapt and reorient himself daily, even hourly, and retain his freedom of action. Everything is in motion; he must be constantly on the alert, all the time on the edge of capture or destruction...There can be no conservatism of thought or action...Speed of judgment, and action to create changing situations and surprises for the enemy faster than he can react...these are the fundamentals of (the) desert... (26)

Rommel is a fascinating case study in military genius, to say the least. From the purely tactical standpoint, his coup d'oeil dominated the action. With a smaller force than that of the British and while conducting operations in a resource constrained secondary theater, he continually attacked the enemy knowing well that time was working against him. The British could get stronger at a faster rate than he could ever hope for. He therefore vigorously tried to take them out of the war as quickly as possible. Unfortunately for Rommel, his "inner light to the truth" was not linked to Hitler's strategic aims. Rommel's genius at the operational level of war is suspect at best.

The North African campaign was an economy of force operation from the strategic perspective. What Rommel hoped to accomplish was beyond his means, although to his credit he came very close to victory. Coup d'oeil and determination are from the same seed for, "the mind tells man that boldness is required, and thus gives direction to his will." ²⁷ The truth

that Rommel ultimately failed to recognize was that regardless of his tactical success, OKW could not, or would not, take the necessary steps to sustain what Rommel hoped to accomplish in North Africa. Maneuver without sustainment at the operational level of war results in an imbalance within the dynamic and the eventual withering away of the force. Rommel's failure to react appropriately to this imbalance casts serious doubt on his military genius. He relied on coup d'oeil and determination to overcome the risk he incurred by attempting to maintain the initiative without adequate means.

Initiative

As stated previously, commanders do not relinquish the initiative easily. They continuously seek to set or change the terms of battle. The fall of Tobruk and the collapse of the British Eighth Army presented Rommel with a unique opportunity.²⁸ In Rommel's words "the road to Alexandria lay open." He elected to keep the initiative and pursue, despite the weakened, logistically strapped condition of his army. Interestingly, his reaction to the British commander's decision not to pursue the defeated Italians in early 1941 provides insight into Rommel's understanding of the maneuver-sustainment dynamic:

The reason for giving up the pursuit is almost always the quartermaster's growing difficulty in spanning the lengthened supply routes with his available transport. As the commander usually pays great attention to his quartermaster and allows the latter's estimate of the supply possibilities to determine his strategic plan, it has become the habit for quartermaster staffs to complain at every difficulty, instead of getting on with the job and using their powers of improvisation, which indeed are frequently nil. But generally the commander meekly accepts the situation and shapes his action accordingly. (29)

There was not a meek bone in Rommel's body and he had no intention of giving up the initiative.

To Rommel's credit, he recognized the logistical dilemma in which he found himself and came up with a solution totally consistent with his personality, past combat experience, and military training:

The best thing is for the commander himself to have a clear picture of the real potentialities of his supply organisation and to base all his demands on his own estimate. This will force supply staffs to develop their initiative and though they may grumble, they will as a result produce many times what they would have done left to themselves. (30)

Clearly Rommel's decision to pursue changed the terms of battle, but not in his favor. His pursuit of the British stretched his already strained lines of communication to the breaking point with no additional material assistance forthcoming from OKW. As his lines of communications lengthened, the British were falling back on theirs. Rommel in essence based his pursuit upon the ability of his army to improvise logistics. It was an overwhelming task, despite the acquisition of Tobruk and its resources. Had Rommel delayed his pursuit and taken the time to rejuvenate his army, he may have also delayed the culminating point of his offensive and defeated the British. It was not in Rommel's makeup as a commander to do so, for he had the British by their collective throats. The decision to maintain the initiative through pursuit ultimately resulted in an imbalance in the maneuver-sustainment dynamic, as the resources were insufficient to sustain the course of action selected.

Rommel's North Africa campaign demonstrates the validity of the maneuver-sustainment dynamic model as each of the model's

elements was present during the campaign to a great degree. Whereas Slim was able to achieve more balance in the dynamic between maneuver and sustainment, Rommel did not and relied upon speed, maneuver, and concentration to mitigate the endemic risk associated with such an imbalance. He designed and executed a maneuver driven campaign beyond the point of culmination. Time, distance, and the resource constraints imposed on him by OKW all worked against him nearly to the point that the outcome of the campaign was inevitable. Perhaps Rommel realized this from the start and, using his terminology, was compelled to transition from conducting bold operations to taking a military gamble.

This campaign suggests that synergism within the maneuver-sustainment dynamic is not possible when one or more of the model's elements is flawed. Rommel relied too heavily on his genius as the commander; he insisted on maintaining the initiative through pursuit and it blinded him of the real risks involved; and he paid too little attention to logistical concentration or the establishment of a base of operations. The fatal flaw, however, was within Rommel himself, specifically his genius. Hindsight being unforgiving, following the capture of Tobruk, Rommel's coup d'oeil should have led him down the more conservative path of concentrating his resources in preparation for the final push. Determination would have been better demonstrated on Rommel's part had he used it to fight off the overwhelming urge to pursue. His decision to forego logistical concentration is what one would expect from a tactical commander caught up in the intoxication of battlefield success, rather than an operational commander who must consider the

maneuver-sustainment dynamic in preparation for the next phase of the campaign.

VI. Eisenhower in France

The logistical plan for OVERLORD met all the tests of logic and was meticulous in its detail. In a nutshell, it called for the establishment of a lodgement area; the rapid build-up of a temporary supply base; reinforcement of forces ashore; the rebuilding of ports; and the development of lines of communications in order to conduct sustained combat operations.
31

By 1 August 1944, General Dwight D. Eisenhower had firmly established an Allied presence on the European continent. Lieutenant General Omar N. Bradley commanded the 12th Army Group with Lieutenant General Courtney H. Hodges' First and Lieutenant General George S. Patton's Third Armies under his direction. Field Marshal Sir Bernard L. Montgomery commanded 21st Army Group with Lieutenant General Henry D. Crerar's First Canadian and Lieutenant General Miles C. Dempsey's Second British Armies.

Patton's Third Army consisted of the VIII and XV Corps with a total of seven divisions. In the first three days of August, his tanks raced seventy-five miles through the Avranches gap with the mission to clear the Brittany Peninsula, one of the imperatives to OVERLORD's success. A port of sufficient capacity had to be secured in order to support the requisite level of force build-up necessary to defeat the Germans. US forces in particular required the Breton ports to sustain future

operations.

According to the OVERLORD plan, Patton's mission was to clear the Brittany peninsula, seize Quibron Bay and Brest first, and then other ports later. Only after these activities were accomplished, was he to turn his attention to a drive eastward to Paris and the Seine River. ³² By 3 August, Remes was captured. As a result of this initial success and the threat of a German counterattack, Third Army was then directed by General Bradley to employ the minimum forces necessary to clear the Brittany peninsula, protect the 12th Army Group's southern flank along the Loire River, and make its main effort eastward to the Mayenne River.

On 7 August, the Germans counterattacked against General Hodges' First Army in an effort to close off the Avranches gap, isolate the Third Army, and eventually turn north to defeat the OVERLORD beachhead. The enemy's deep penetration created an assailable flank and on 8 August Bradley directed Patton to send his XV Corps north to Argentan in an attempt to conduct an encirclement of the German Seventh Army with Montgomery's 21st Army Group which was converging on Falaise. Patton's VIII Corps was to continue to clear Brittany. On 13 August, Bradley, in a controversial decision, ordered a halt to the envelopment. The attempt to trap the German forces failed due to Allied "uninteroperability"; an early opportunity was lost. The enemy escaped by the time the pocket was closed and the pursuit across France was on. ³³

A day after Patton was ordered to discontinue efforts to trap the Germans at Falaise, Bradley directed Patton to continue

the advance eastward with the XV Corps and the newly acquired XX and XII Corps. By 19 August, Third Army established a bridgehead across the Seine River, thirty miles below Paris. Four armies - Crerar, Dempsey, Hodges, and Patton - were in fact in position along this line and were eager to continue the fight. The OVERLORD plan had considered an operational pause of about thirty days at the Seine, but with German forces in complete disarray, General Eisenhower decided to pursue beyond the Seine "at the maximum rate which logistical capabilities would allow."³⁴

The original plan also called for a steady advance all along the front, a broad front strategy, with the armies advancing together paced by their resources. Resounding success, however, suggested to the army group commanders that a single, deep drive was the best course of action. Montgomery wanted Dempsey to conduct this thrust on the 21st Army Group's front and Bradley wanted Hodges or Patton to do the same on his front. Eisenhower compromised and let Montgomery throw Dempsey forward, with Hodges protecting the 21st Army Group's right flank. The Supreme Commander told Patton to drive as far as he could on whatever resources were left over.³⁵

By 25 August, Third Army had pursued beyond the Marne River captured Reims and Chalons-sur-Marne. Meanwhile, as Crerar's First Canadian Army cleared the Channel ports, Hodges and Dempsey drove into Belgium where they eventually came to a halt due to difficult terrain, insufficient supplies, and enemy resistance. Turning eastward, Patton was able to reach the Meuse River and began crossing on 31 August. In the next twelve

days, Third Army established a bridgehead on the Moselle near Metz and Nancy, but by 12 September, the enemy's stiff resistance and Third Army's strained lines of communication ended the momentum of the pursuit across France.

Application of the Maneuver-Sustainment Dynamic Model

Risk

Eisenhower's pursuit across France demonstrated the willingness of the Supreme Commander to accept logistical risk at the operational level of war in order to exploit maneuver success at the tactical level. His decision to forego an operational pause at the Seine River is a clear-cut example of the maneuver - sustainment dynamic in action.

Tactically, the decision was a logical one, for the Allied armies were clearly superior at that point in time. The rapidly disintegrating enemy resistance offered an opportunity which was impossible to ignore. Operationally, however, the decision to pursue moved beyond the means available to sustain such a venture and risked the complete disruption of logistical operations on the continent.³⁶ Interestingly, Eisenhower was prepared to accept even more risk, as on 10 September he had authorized both First and Third Armies to advance beyond the West Wall.

He admitted that the supply organization already was stretched to the breaking point, but he believed the operation was a gamble worth taking in order to profit fully by the disorganized state of the German forces. (37)

Continuation of the pursuit across the Moselle River was

contingent upon Patton's ability to achieve a quick victory. As events unfolded, enemy resistance was too great and the lines of communication too tenuous in terms of capability to support a viable offensive operation.

Eisenhower, in his role as operational commander, based his decision to forego an operational pause at the Seine River on the maneuver-sustainment dynamic. He determined that the means were available to continue the pursuit. Although a serious sustainment shortfall may have resulted at a later date, he decided the short-term risk to be prudent. At the Moselle, however, an imbalance within the dynamic was evident. The means were not available to sustain the effort. Despite this imbalance, he decided to accept even more risk, but with one proviso. Victory must be achieved quickly, within a few days after the start of the attack across the Moselle. Third Army was unable to meet this criterion so the Supreme Commander suspended offensive operations, established a defense, and declared an operational pause.

The element of risk in the maneuver-sustainment dynamic model is a useful one in determining the identity of the operational commander; sometimes it is difficult to ascertain. Who, in fact, makes the decision to accept risk and therefore an imbalance in the dynamic? Who links the strategic aim with the tactical objective? Who, in fact, controls the maneuver forces and the sustainment capability? In this instance, it certainly was not the army commanders or even the army group commanders; they were compelled by Eisenhower to accept risk at the tactical level. The Supreme Commander made the decisions at the Seine

and the Moselle to continue the pursuit.

Similarly, it was Slim who decided to wait for Kimura to attack him and it was Rommel who made the decision to pursue the British after the fall of Tobruk. These men wore operational spurs. The operational commander's primary concern must be the destruction of the enemy force. The opportunities for exploitation and pursuit must be explored to the fullest extent possible. "Pushing the operational envelope" in terms of the maneuver-sustainment dynamic may require the operational commander to approach the point of culmination during a pursuit to reap the benefits of enemy disorganization.

Concentration

The maneuver-sustainment dynamic model's element of concentration further helps to identify the operational commander. Ultimately, neither Bradley nor Montgomery controlled the resources necessary to concentrate their army groups against the enemy's center of gravity. That control rested with Eisenhower. Regardless, the antithesis of concentration was the rule.

Bradley, with Eisenhower's approval, gave Patton three mutually exclusive missions following the breakout: clear the Brittany peninsula, protect the 12th Army Group's southern flank, and drive to the east. Additionally, when the Germans counterattacked on 7 August, Bradley took two of Patton's divisions and gave them to First Army to help blunt the penetration. The result of this dispersion of Patton's combat power was that at the moment when Montgomery's 21st Army Group and Third Army were converging for the encirclement of German

forces, Patton had only the XV Corps in position at Argentan. VIII Corps was attempting to seize Breton ports as per the OVERLORD plan. Notwithstanding the inherent confusion of two Allied forces converging, one can argue that a concentrated Third Army placed astride the flank of the German penetration could have facilitated a more realistic opportunity to close the Falaise Pocket.

This divergence of purpose epitomizes the tension which exists between maneuver and sustainment at the operational level of war. Patton's two corps army found itself with one corps attacking westward into Brittany to seize logistical objectives while the other attacked eastward to exploit tactical success. The operational commander, Eisenhower, wanted the best of both worlds at the expense of concentration. The continental ports were needed to sustain future operations, but destruction of the enemy force was also important. The result was that Third Army conducted divergent operations and could not concentrate.

Once Bradley was able to concentrate his 12th Army Group against disorganized enemy elements during the headlong drive to the Moselle he did not control the resources, as Eisenhower alternately turned the supply spigot on and off between his two army groups. Initially, the OVERLORD planners had decided against conducting two lines of operations due to the problem of sustaining the widely separated army groups. ³⁸ Patton's advance from the Seine to the Meuse, where he ran out of fuel, was remarkable in that it "had been possible largely through herculean supply efforts, airlifted supplies, and the capture of considerable fuel." ³⁹ Eisenhower, through Patton, attempted

to conduct operational maneuver with tactical sustainment capabilities. Within the maneuver-sustainment dynamic, concentration of force demands concentrated sustainment at the operational level of war.

Genius

Eisenhower clearly demonstrated the military genius required to function within the maneuver-sustainment dynamic. The near total defeat and capture of the German Seventh Army in the Falaise-Argentan pocket and the disintegration of enemy forces throughout France presented opportunities which demanded continued offensive action. In addition, with forty-six divisions on the continent of Europe, Eisenhower's armies enjoyed superiority in infantry, armor, and air power. His genius lay in his ability to recognize this advantage, divert from the rigidity of the OVERLORD plan, and focus on the destruction of the enemy.

Although some of his commanders were more receptive to a campaign of increased tempo than others, he was able to communicate this sense of opportunism to his subordinates. At the Seine River, where Eisenhower made the decision to forego a month long operational pause, Patton told his XV Corps commander "to drive as long as (you have) any petrol left and then get out and walk."⁴⁰ He was, however, not immune to criticism.

Patton, for example, called Eisenhower's decision to resource 21st Army Group and First Army for Montgomery's single thrust venture at the expense of Third Army "the most momentous error of the war."⁴¹ He exclaimed to Bradley, "To Hell with Hodges and Monty. We'll win your goddam war if you'll keep

Third Army going." Montgomery, too, had similar complaints directed against Bradley and Patton following the unsuccessful Market-Garden operation. The episodes highlight a flaw in Eisenhower's genius as an operational commander.

His military genius was somewhat clouded by the political burdens of coalition warfare and yet it remained intact. At times, his positions as Supreme Commander and operational commander would clash. The result of this collision manifested itself in the maneuver-sustainment dynamic. Clearly, he understood the dynamic, but was unable to consistently use this knowledge at the operational level for political and strategic reasons. The broad front strategy which selectively concentrated resources from army group to army group resulted in transitory concentration and no main effort at the operational level. Perhaps a single thrust by one army group or the other would have been operationally correct, but politically it was unacceptable. Eisenhower recognized this reality, operated within the constraints, and through sheer force of will, made it work.

Initiative

Initiative, to set or change the terms of battle through action, is undoubtedly the most volatile element within the maneuver-sustainment dynamic. One man's initiative in the maneuver arena is another man's logistical setback with respect to sustainment. Eisenhower's decision to focus Third Army's main effort eastward while applying minimum force to the Brittany peninsula prompted this comment:

While the redirection of the Third Army's effort was expected to delay the capture of the Brittany ports somewhat,

such a delay was expected to be a minor one and therefore acceptable. Nevertheless this decision marked the first step in a repeated subordination of logistic considerations to prospects of immediate tactical advantage. (43)

The statement strikes to the heart of the maneuver-sustainment dynamic. Which should have priority: maneuver or sustainment? Taking risk into consideration, the opportunity to exercise initiative through maneuver must be balanced with the capability to sustain such operations. At one end of the spectrum, an overemphasis on sustainment can inhibit initiative and result in an overly conservative campaign plan. At the other end, imprudent initiative can overwhelm sustainment capabilities, resulting in recklessness and disaster.

One could argue that the broad front strategy resulted in a sustainment driven campaign devoid of initiative and/or maneuver at the operational level. Certainly many of the major decisions made during the pursuit across France were of a logistical nature. However, one may also argue, and rightly so, that it was a maneuver driven campaign of the highest order.

By redirecting Bradley from Brittany to the east, Eisenhower attempted to set or change the terms of battle and sought to make the enemy conform to his operational purpose, namely the pursuit and/or destruction of the enemy. Eisenhower's decisions to continue the pursuit at the Seine and Moselle were made to maintain the tempo of operations and to preserve freedom of action. The decision at the Seine proved to be a good one, although use of the initiative in lieu of a planned operational pause bore a price paid at the Moselle, where both operational tempo and freedom of action were lost

through enemy activity and logistical deficiencies.

Initiative in the form of maneuver at the operational level of war must be sustained. Eisenhower's attempt to exploit at the operational level was successful until the strength of his armies was no longer superior to that of the defending enemy. Martin Blumenson shrewdly observed that:

...pursuit warfare by its very nature is fluid, the drive beyond the Seine was relatively uncontrolled...the only limiting factor being a developing shortage of supplies, particularly gasoline, which by early September was starting to curtail motor transportation, then essential to the pursuit. The shortage resulted from the inability of the Communications Zone supply apparatus to keep up with the spectacular speed of the breakout... (44)

Whether the repeated subordination of logistics to tactical opportunities or the inability of logistics to keep up, initiative remains a volatile fixture in the maneuver-sustainment dynamic.

Application of the maneuver-sustainment dynamic to this campaign suggests that Eisenhower was the operational commander in the pursuit across France. He provided the link between the tactical and strategic levels of war; he made the key decisions regarding the purpose, direction of attack, and sustainment of operational forces. Bradley and Montgomery, although they sought to fight at the operational level, were prevented from doing so by Eisenhower for political and strategic reasons. The model further suggests that coalition warfare has a tendency to skew, either positively or negatively, the operational commander's decisions regarding maneuver and sustainment.

VII. Theory, Doctrine, and the Maneuver-Sustainment Model

At the operational level of war, three key theoretical concepts of operational design are integral to the warfighting doctrine of the US Army and the maneuver-sustainment dynamic model: center of gravity, lines of operations, and culminating point. Previous sections of this effort determined that each of the elements of the proposed model were present during the campaigns of Slim, Rommel, and Eisenhower. This section will determine whether or not the model is supported by theory and doctrine.

According to FM 100-5, center of gravity is "that characteristic, capability, or locality from which the force derives its freedom of action, physical strength, or will to fight." ⁴⁵ To a great extent, the synergistic effect of the elements of the maneuver-sustainment dynamic model combine during a campaign to determine the center of gravity for an armed force.

Freedom of action is achieved through the element of risk, as the commander accepts an imbalance in the ways and means available to reach an end state. When Slim waited for Kimura to attack him, he was anticipating the moment he could regain his freedom of action. Rommel after the fall of Tobruk and Eisenhower at the Seine accepted an imbalance between ways and means in order to maintain the initiative and tempo of their operations. Once Kimura, Rommel, and Eisenhower no longer possessed the means available to continue offensive operations they either culminated or required an operational pause; in any event, they lost the initiative and therefore their freedom of

action. Freedom of action within the maneuver-sustainment dynamic model also applies to the commander's ability to concentrate both combat power against enemy weakness and the resources to sustain freedom of action. Eisenhower lost his freedom of action when he ran out of gas at the West Wall.

Physical strength is a function of concentration, both logistical and force. To build his center of gravity in preparation for his counteroffensive, Slim concentrated his resources in the defense while his opponent's physical strength evaporated in the offense. Mikura's physical strength became unhinged by Slim's concentration against Meiktila. Rommel could concentrate his forces, but he lacked a concentration of resources at the operational level which critically hamstrung his chances for a decisive victory against the British. After the Seine, Eisenhower too could concentrate forces but had no logistical capability to sustain them.

An armed force's will to fight is supported by each of the elements of the maneuver-sustainment dynamic model, but is particularly sensitive to the genius of the commander. The commander's competence on the battlefield is a function of his coup d'oeil and his determination to succeed, a very contagious aspect of military genius, but one which must originate with the commander. Imprudent risk, loss of the initiative, and enemy concentration against decisive points can all impact negatively upon an army's will to fight and result in the unhinging of the friendly center of gravity.

Another aspect of the center of gravity concept which the maneuver-sustainment dynamic model helps to clarify is that

one's own dynamic is relative to the enemy's dynamic. The force which can achieve the most potent maneuver-sustainment dynamic should win against a less capable dynamic. Slim's dynamic was superior to that of Kimura after defeating the Japanese offensive; Rommel's dynamic, though operationally flawed through lack of sustainment, was stronger than the British dynamic until he culminated at El Alamein; and Eisenhower's dynamic was better than the Germans until he reached the Moselle River and was compelled to conduct an operational pause.

Like the center of gravity concept, lines of operation help to define the maneuver-sustainment dynamic. Lines of operation, as stated in FM 100-5, "connect the force with its base or bases of operations on the one hand and its operational objective on the other."⁴⁶ They, in essence, represent the integration of operational maneuver and sustainment. Slim and Rommel operated on a single line of operation primarily because they lacked the resources to employ more than one. The single line of operation allowed them to better concentrate the meager resources they did possess. It also reduced the inherent risk associated with trying to secure two lines of operation and eliminated the requirement for lateral communications between lines of operation. In terms of the maneuver-sustainment dynamic, a single line of operation lends stability to the dynamic because of the single focus of combat power and resources.

Conversely, Eisenhower could afford two lines of operations in Europe which resulted in a broad front strategy. Resources were allocated everywhere and therefore concentrated nowhere. Slim, after dividing his army before the Irrawaddy River,

demonstrated the operational flexibility which can be achieved with two lines of operation. His flexibility set the terms of battle by using positional advantage to successfully unhinge his enemy. Slim mitigated the risks involved in establishing two lines of operations with aerial resupply, engineer operations, and logistical improvisation. Just as center of gravity and lines of operation lend theoretical and doctrinal support to the maneuver-sustainment dynamic model, so does the final concept of operational design to be discussed here, the culminating point.

The culminating point establishes the limits of the maneuver-sustainment dynamic, whereas the other two concepts of operational design have a more positive purpose. FM 100-5 defines the culminating point as the

point where the strength of the attacker no longer significantly exceeds that of the defender, and beyond which continued offensive operations...risk overextension, counterattack, and defeat.(47)

Every maneuver-sustainment dynamic has a built-in culminating point. The culminating point provides the ultimate risk for the operational commander who understands the maneuver-sustainment dynamic, for it is the line beyond which the acceptance of risk is no longer a viable option.

As the defender, Slim accelerated the culminating point of Kimura's offensive at Imphal-Kohima, saw the opportunity which this presented to him and seized the initiative. In terms of the maneuver-sustainment dynamic, Slim knew his dynamic was stronger than that of his enemy and recognized the imbalance within Kimura's dynamic. Rommel and Eisenhower, during their headlong pursuits of the enemy, were rapidly approaching the

culminating points of their offensive operations. Their genius determined the risk to be acceptable; by maintaining the tempo and concentration of their operations, they could achieve victory before reaching the point of culmination. Operational commanders must come to grips with the concept of culminating point. The elements of the maneuver-sustainment dynamic model provide a useful framework in which to begin this understanding.

VIII. Conclusion

The maneuver-sustainment dynamic model is a useful tool for examining historical campaigns. The character, or orientation of a campaign with respect to operational maneuver and sustainment can be determined through the use of this model. Each of the model's elements addresses a specific aspect of the campaign, but it is the synergism effect which really defines the campaign.

Campaign planners and operational commanders must understand the maneuver-sustainment dynamic. It incorporates the key concepts of operational design integral to our warfighting doctrine and in many respects makes them more tangible. The model also identifies and examines the tension which exists between these two operational functions. Not discussed here, is how the other operational functions (intelligence, fires, and deception) relate to the maneuver-sustainment dynamic; an important matter for further study.

The maneuver-sustainment dynamic model suggests that

logistical risk and operational success can have a cause and effect relationship, if the elements of the model combine to achieve a synergistic advantage over the enemy. The essence of operational art lies in the commander's ability to influence the action through the directing of resources. However, the window for logistical risk can be a narrow, fragile one which, if negotiated correctly, can produce decisive victory. A poor outing will have just the opposite effect.

The three campaigns examined here portend that up to a certain point, campaigns, which focus more on the destruction of the enemy force than on the sustainment of the friendly force, have a greater potential for success when the maneuver-sustainment dynamic is in their favor. The model further suggests that if the commander miscalculates the dynamic, an operational pause or culminating point will quickly suspend offensive operations. When this occurs, the dissonance within the dynamic can be fatal.

Application of the model to the three campaigns cited suggests that the army with limited resources can only prevail through the use of successful maneuver, whereas the army with material superiority can employ maneuver or attrition. Having a choice may result in an inherently more conservative approach to war. Slim used maneuver to achieve positional advantage over the Japanese by concentrating against a logistical decisive point. Rommel employed speed of maneuver and tempo of operations to compensate for his force structure and logistical shortcomings. Although Eisenhower demonstrated flashes of bold operational maneuver, the broad front strategy was eminently

conservative in nature. Ultimately, the commander must evaluate the strength of his maneuver-sustainment dynamic relative to that of the enemy's in time and space.

A final thought regarding the maneuver-sustainment dynamic is that one cannot mention operational maneuver without including something about operational sustainment in the same breath. As much as some would like to deal with them separately, it simply cannot be done. The commander and staff who are able to incorporate the maneuver-sustainment dynamic's elements of risk, concentration, genius, and initiative into the planning and execution of their campaign plan are on the road to victory.

ENDNOTES

1. US Department of the Army, Large Unit Operations (Coordinating Draft), Field Manual 100-6 (Washington, DC: US Government Printing Office, 1987), p. 3-5.
2. IBID, p. 3-13.
3. Carl von Clausewitz, On War, trans. M. Howard and P. Paret (Princeton: Princeton University Press, 1984), p. 489.
4. US Department of the Army, Operations, Field Manual 100-5 (Washington, DC: US Government Printing Office, 1986), p. 179.
5. Clausewitz, p. 100.
6. IBID, p. 102.
7. L.D. Holder, "A New Day for Operational Art," course reading for A391, The Operational Level of War (Fort Leavenworth, KS: US Army Command and General Staff College, 1988), p. 7.
8. Field Manual 100-5, p. 15.
9. Field Manual 100-6 (Coordinating Draft), p. 4-10.
10. Clayton R. Newell, "Logistical Art," Parameters (March 1989), p. 34.
11. William J. Slim, Defeat Into Victory (London: Cassell, 1956), p. 437.
12. IBID, p. 425-6.
13. Correlli Barnett, "The Impact of Surprise and Initiative in War," Parameters (Winter, 1984), p. 76.
14. IBID.
15. Williamson Murray, "British Military Effectiveness in the Second World War," in Military Effectiveness, Volume II: The Second World War, ed. Allan R. Millet and Williamson Murray, (Boston: Allen and Unwin, Inc, 1988), p. 323.
16. Geoffrey Evans, Slim as Military Commander, (London: BT Batsford, LTD, 1969), p. 51.
17. Slim, p. 539.
18. Erwin Rommel, The Rommel Papers, ed. BH Liddell Hart, trans. Paul Findlay (New York: Harcourt and Brace, 1953), p. 252.
19. Matthew Cooper, The German Army, 1933-1945: Its Political and Military Failure (New York: Stein and Day, 1978), p. 353.
20. Rommel, p. 201.

21. IBID.
22. Cooper, p. 379.
23. Rommel, p. 111.
24. Cooper, p. 369.
25. IBID, p. 352.
26. Rommel, p. 184.
27. Clausewitz, p. 103.
28. Rommel, p. 261.
29. IBID, p. 96.
30. IBID.
31. Roland G. Ruppenthal, Logistical Support of the Armies, Volume I: May 1941-September 1944 (Washington, DC: Office of the Chief of Military History, 1953), p. 267.
32. Martin Blumenson, Breakout and Pursuit (Washington, DC: Center of Military History, 1984), p. 479.
33. Vincent J. Esposito, The West Point Atlas of American Wars, Volume II: 1900-1953, (New York: Praeger Publishers, 1959), p. 56.
34. Blumenson, p. 348.
35. James L. Stokesbury, A Short History of World War II (New York: William Morrow and Company, Inc., 1980), p. 324.
36. Roland G. Ruppenthal, "Logistics and the Broad-Front Strategy," in Command Decisions (Washington, DC: Center of Military History, 1987), p. 422.
37. IBID, p. 423.
38. Ruppenthal, Logistical Support of the Armies, Volume I: May 1941-September 1944, p. 485.
39. Esposito, p. 56.
40. BH Liddell Hart, History of the Second World War (New York: Putnam's, 1971) p. 562.
41. IBID.
42. IBID.
43. Ruppenthal, Logistical Support of the Armies, Volume I: May 1941-September 1944, p. 482.

44. Martin Blumenson and James L. Stokesbury, Masters of the Art of Command, (Boston: Houghton Mifflin Company, 1975), p. 313.
45. Field Manual 100-5, p. 179.

46. IBID, p. 180.

47. IBID, p. 181.

BIBLIOGRAPHY

- Allen, Louis. Burma: The Longest War, 1941-45. New York: St. Martin's Press, 1984.
- Atkeson Edward B. "The Operational Level of War," in Military Review, March 1987.
- Barnett, Correlli. "The Impact of Surprise and Initiative in War," in Parameters, Winter 1984.
- _____. The Desert Generals. London: 1961.
- Bellamy, Chris. The Future of Land Warfare. New York: St. Martin's Press, 1987.
- Blumenson, Martin. Breakout and Pursuit. US Army in World War II. Washington, DC: Office of the Chief of Military History, US Army, 1970 (reprint).
- _____. Masters of the Art of Command. Boston: Houghton Mifflin Company, 1975.
- Busch, E. "Quartermaster Supply of Third Army," in The Quartermaster Review, November-December 1946.
- Clausewitz, Carl von. On War. Princeton, New Jersey: Princeton University Press, 1984.
- Cooper, Matthew. The German Army, 1933-1945: It Political and Military Failure. New York: Stein and Day, 1978.
- Crevelld, Martin van. Command in War. London: Harvard University Press, 1985.
- _____. Fighting Power: German and US Army Performance, 1939-1945. Wesport: Greenwood Press, 1982.
- _____. Supplying War: Logistics From Wallenstein to Patton. London: Cambridge University Press, 1977.
- Evans, Geoffrey. Slim as Military Commander. London: B.T. Batsford, Ltd, 1969.
- Esposito, Vincent J. The West Point Atlas of American Wars. New York: Praeger Publishers, 1959.
- Franz, Wallace P. "Maneuver: The Dynamic Element of Combat Power," in Military Review, June 1983.
- Gabel, Christopher R. The Lorraine Campaign: An Overview, September-December 1944. Fort Leavenworth, KS: Combat Studies Institute, February 1985.

- Glantz, David M. "Toward Deep Battle: The Soviet Conduct of Operational Maneuver," in Readings for Applied Tactical Operations, vol III. Fort Leavenworth, KS: US Army Command and General Staff College, 1988.
- Greenfield, Kent R. Command Decisions. Washington, DC: Center of Military History, 1987.
- Hanne, William G. "Doctrine, Not Dogma," in Military Review, June 1983.
- Higgins, George A. "German and US Operational Art: A Contrast in Maneuver," in Military Review, October 1985.
- Holder, L.D. "A New Day for Operational Art," course reading for A 391, The Operational Level of War, 1988.
- Jomini, Baron de. The Art of War. Westport, CT: Greenwood Press, 1862.
- Lewin, Ronald. Rommel as a Military Commander. London: 1968.
- Liddell Hart, B.H. History of the Second World War. New York: Putnam's, 1971.
- _____. The Other Side of the Hill. London: Cassell, 1951.
- Lind William S. "The Case for Maneuver Doctrine," in The Defense Reform Debate, ed. Asa A. Clark IV, Peter W. Chiarelli, Jeffrey S. McKittrick and James Reed. Baltimore: The Johns Hopkins University Press, 1984.
- Luttwak, Edward N. "The American Style of Warfare and the Military Balance," in Survival, March-April 1979.
- _____. "The Operational Level of War," in International Security, Winter 1980.
- Luvaas, Jay. "Thinking at the Operational Level," in Parameters, Spring 1986.
- Matloff, Maurice. "The American Approach to War, 1919-1945," in The Theory and Practice of War: Essays Presented to B.H. Liddell Hart on His Seventieth Birthday, ed. Michael Howard. New York: Frederick A. Praeger, 1965.
- Millett, Allan R. "The United States Armed Forces in the Second World War," in Military Effectiveness: Volume III: The Second World War, ed. Allan R. Millett and Williamson Murray. Boston: Allen & Unwin, 1988.
- Murray, Williamson. "British Military Effectiveness in the Second World War," in Military Effectiveness: Volume II: The Second World War, ed. Allan R. Millett and Williamson Murray. Boston: Allen & Unwin, 1988.

- Newell, Clayton R. "Logistical Art," in Parameters, March 1989.
- _____. "Operating in the 21st Century," in Military Review, September 1986.
- Romjue, John L. From Active Defense to AirLand Battle. TRADOC Historical Monograph Series. Fort Monroe: US Army Training and Doctrine Command, 1984.
- Rommel, Erwin. The Rommel Papers. Edited by B.H. Liddell Hart. Translated by Paul Findlay. New York: Harcourt, Brace, 1953.
- Ruppenthal, Roland G. Logistical Support of the Armies, Volume I: May 1941-September 1944. Washington, DC: Office of the Chief of Military History, 1953.
- Scott, Glenn L. "British and German Operational Styles in World War II," in Military Review, October 1985.
- Simpkin, Richard E. Race to the Swift. London: Brassey's Defence Publishers, 1985.
- Slim, William Joseph. Defeat Into Victory. London: Cassell, 1956.
- Starry, Don A. "A Perspective on American Military Thought," Military Review, July 1989.
- Stokesbury, James L. A Short History of World War II. New York: William Morrow and Company, Inc., 1980.
- The BDM Corporation. "A Study of Strategic Lessons Learned in Vietnam: Omnibus Executive Summary," Washington, DC: The BDM Corporation, 1980.
- Tukhachevskiy, Mikhail. New Problems in Warfare. Carlisle Barracks: Art of War Colloquium, 1983 (reprinted in Readings for Applied Tactical Operations).
- US Army. Field Manual 100-5, Operations. Washington, DC: US Government Printing Office, 1986.
- _____. Field Manual 100-6, Large Unit Operations (Coordinating Draft), Washington, DC: US Government Printing Office, 1987.
- Vuono, Carl E. "Diverse Threats Demand Force Flexibility," in Army, October 1985.
- _____. "The United States Army Is a Strategic Force," in Armed Forces Journal International, February 1989.
- Weigley, Russell F. Eisenhower's Lieutenants. Bloomington, IN: Indiana University Press, 1981, 1981.
- _____. "Shaping the American Army of World War II: Mobility Versus Power," in Parameters, September 1981.

. The American Way of War: A History of United States
Military Strategy and Policy. New York: Macmillan, 1973.

Williamson, William R. "Campaign Planning," in Parameters, Winter
1984.